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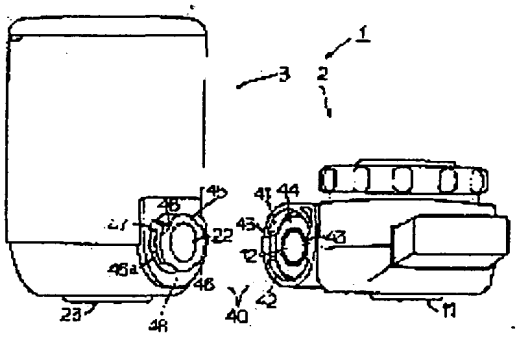
YONEZAWA YASUO

(54) WATER PURIFIER

(57)Abstract:
PROBLEM TO BE SOLVED: To provide a water purifier in which a cartridge can be connected with a valve main body simply and surely, and a seal member can hardly be dropped off even when an operator discharges water erroneously before the connection of the cartridge.
SOLUTION: In a water purifier equipped with a valve main body 2 having a raw water introduction port and a raw water take-up opening 12 and a filtration part 3 having a raw water receiving port 22 which receives raw water from the valve main body 2 and filters it, the port 22 is connected freely detachably with the opening 12, and in either the opening 12 or the port 22, a seal member 44 is arranged and a seal member dropping preventive part is formed.



LEGAL STATUS

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* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] Accept and filter raw water from the valve mainframe which has a raw water input and raw water output port, and this valve mainframe. Are the water purifier equipped with the filtration section which has the raw water acceptance opening, and the raw water acceptance opening of the filtration section is connected to the raw water output port of the aforementioned valve mainframe free [attachment and detachment]. And the water purifier characterized by forming seals member ****** while a seals member is arranged by either [at least] the raw water output port of a valve mainframe, or the raw water acceptance opening of the filtration section.
[Claim 2] The heights of the shape of a cylinder formed in any of the raw water output port of a valve mainframe, or the raw water acceptance opening of the filtration section, or one side in the water purifier according to claim 1, It has the bayonet device which was formed in another side and which consists of a concavity in which the heights is attached. to the aforementioned heights The water purifier with which the 2nd overhang section which the 1st overhang section prolonged in the hoop direction is formed partially [a nose of cam side periphery side], and has been prolonged in the notch which permits irruption of the 1st overhang section of the aforementioned heights in the aforementioned concavity, and the hoop direction is formed.
[Claim 3] The water purifier with which the seals member has the overhang section which can engage with seals member ****** in the water purifier according to claim 1 or 2.
[Claim 4] The water purifier with which 2nd at least one overhang section has seals member ****** in the water purifier according to claim 2 or 3.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[The technical field to which invention belongs] this invention relates to the connection between these valves mainframe and the filtration section still in detail about the water purifier equipped with the valve mainframe which has the input and output port of raw water, and the filtration section which filters the accepted raw water.
[0002]
[Description of the Prior Art] The water purifier attached in the aqueductus faucet of a general home consists of a valve mainframe which generally has an input and two or more tap holes, and the filtration section by which the filtering medium was contained. Since it will large-sized-ize and it will become an obstacle of work, such as tableware washing, if a filtering medium is contained in large quantities among the filtration section, if the small cartridge which carried out the little receipt of the filtering medium is connected to a valve mainframe and a filtration efficiency falls, the method which exchanges cartridges is used widely.
[0003] The connection with the valve mainframe of a cartridge is easy to work, and its positive technique which a leak moreover does not produce is desirable. The heights formed in the cartridge is inserted in the concavity formed in a valve mainframe which is indicated by JP,7-116656,A and JP,7-204636,A, and the bayonet formula connection which is engaged and connects the overhang section of concavity inner skin and the overhang section of a heights periphery side is easy to work, and does not require time. And since the valve mainframe and the cartridge have stuck through a ring-like seals member in a connection, a leak seldom happens outside.
[0004] However, the ring-like seals member was only simply inserted in the concavity formed in the valve mainframe, with the structure without omission setting, with water, a ring-like seals member will fall out and these water purifiers will fly, if a user takes out water accidentally before cartridge connection. Then, when it was used by having connected the cartridge, without a user noticing defluxion of a ring-like seals member, there was a trouble where water will leak from a connection.
[0005]
[Problem(s) to be Solved by the Invention] this invention aims at offering the water purifier which a seals member falls out and seldom flies, when connection of a cartridge with a valve mainframe can be ensured [easily] and a user takes out water before cartridge connection accidentally.
[0006]
[Means for Solving the Problem] The valve mainframe with which this invention for solving the above-mentioned technical probrem has a raw water input and raw water output port, It is the water purifier equipped with the filtration section which accepts and filters raw water from this valve mainframe and which has the raw water acceptance opening. While the raw water acceptance opening of the filtration section is connected to the raw water output port of the aforementioned valve mainframe free [attachment and detachment] and a seals member is arranged by either [at least] the raw water output port of a valve mainframe, or the raw water acceptance opening of the filtration section, it is the water purifier characterized by forming seals member ******.

[0007] The heights of the shape of a cylinder formed in any of the raw water output port of a valve mainframe, or the raw water acceptance opening of the filtration section, or one side here, It has the bayonet device which was formed in another side and which consists of a concavity in which the heights is attached. to a heights The 1st overhang section prolonged in the hoop direction is formed partially [a nose of cam side periphery side], and it is desirable that the notch which permits irruption of the 1st overhang section of a heights in a concavity, and the 2nd overhang section prolonged in the hoop direction are formed. Moreover, having seals member ****** also has the thing for which it has the overhang section to which a seals member can engage with seals member ******, and 2nd at least one desirable overhang section.
[0008]
[Embodiments of the Invention] The water purifier of this invention is attached in an aqueductus faucet as shown in drawing 1 . This water purifier 1 consists of a valve mainframe 2 which contained the method valve structure of three in the interior, and a cartridge (filtration section) 3 by which the filtering medium was contained, and the upper part of the valve mainframe 2 is attached in the aqueductus faucet 4. The valve mainframe 2 and the cartridge 3 are connected free [attachment and detachment].
[0009] The valve mainframe 2 has the shower delivery 11 which uses raw water as shower water as it is, and carries out the regurgitation of the raw water input 10 which accepts raw water from an aqueductus faucet to the upper part at the lower part, as shown in drawing 2 . And the flank of the valve mainframe 2 has raw water output port 12 for supplying the accepted raw water to a cartridge 3. That is, the valve mainframe 2 is equipped with the passage from the aqueductus faucet 4 to the shower delivery 11, and the passage from the aqueductus faucet 4 to raw water output port 12. Although it has the method valve of three which leads the raw water accepted from the raw water input 10 to any of two tap holes, or one side, even if this valve mainframe 2 is a method valve of four which has the raw water straight opening in addition to the raw water shower opening and raw water output port, it may be many ****s which have four or more tap holes. two or more showers with which a cartridge 3 filters and carries out the regurgitation of the raw water which has the raw water acceptance opening 22 connected to the flank of the container 21 at the raw water output port 12 of the valve mainframe 2, and was accepted in the lower part of the container 21 from the raw water acceptance opening 22 -- it has the filtered water feed hopper 23 with a hole And the insertion set-up of the soffit of the cylinder field 24 is carried out through O ring 25 at cylinder-like salient 21a formed in the internal base of a container 21, and the vertical edge periphery side of this cylinder field 24 is being fixed to the internal surface of a container 21 with ring-like VCFs 26 and 27.
[0010] The interior of the cylinder field 24 is loaded with the hollow fiber flux 28 which bundled two or more hollow fibers and was bent to inverted-L-shaped. Closure fixation (potting) of the adhesives 29 is filled up with and carried out to the lower part of the cylinder field 24 the ends end of a hollow fiber, and before inserting in a container 21, the disconnection elimination of a part of potting section is carried out. Consequently, the status that opening of the terminal of each hollow fiber is carried out toward the filtered water feed hopper 23 is maintained.
[0011] It is loaded with the adsorbent 30 which consists of antimicrobial-activity charcoal, a zeolite, ion exchange resin, chelating resin, etc. between the cylinder field 24 and the container 21.
[0012] Opening of the upper part of a container 21 is widely carried out so that it can load with the hollow fiber flux 28 and the adsorbent 30 easily into a container 21, the transparent covering 31 is inserted and the ultrasonic welding of it is carried out so that the dirt condition of a hollow filament can be clearly seen from the exterior. And the container 21 and the lid 32 it can be detached [lid] are attached in the upper part of the transparent covering 31.
[0013] Hereafter, a desirable bayonet device is explained in the connection between a valve mainframe and a cartridge.
[0014] As shown in drawing 3 and the drawing 4 , the cylinder-like concavity 41 is formed in

the raw water output port 12 of valve mainframe 2 flank as an end of the bayonet device 40. A notch 42 and the concavity side overhang section 43 prolonged in the hoop direction are formed in the opening edge side of the inner skin in this concavity 41 the couple every, respectively. In addition, this concavity side overhang section 43 is equivalent to the 2nd [in this invention] overhang section. Moreover, as other end of a bayonet device, as shown in drawing 3 and the drawing 5 , the heights 45 of the shape of a cylinder which can be inserted in the raw water acceptance opening 22 of a cartridge 3 at the above-mentioned concavity 41 is formed. This heights 45 is a minor diameter from the bore formed by part for the point of the concavity side overhang section 43 of the couple in a concavity 41 a little. and the notch 42 of the couple formed in the nose of cam side periphery side of a heights 45 at the inner skin of a concavity 41 -- it is alike, respectively and the heights side overhang section 46 of the couple which can advance is formed In addition, this heights side overhang section 46 is equivalent to the 1st [in this invention] overhang section.

[0015] The valve mainframe 2 and the cartridge 3 will be in the status that the field of the concavity side overhang section 43 and the heights side overhang section 46 which counters engaged and joined together, by inserting a heights 45 in a concavity 41 and carrying out the relative displacement of both to the circumference of ****, as shown in drawing 6 . Moreover, by carrying out a relative displacement to the opposite direction, the concavity side overhang section 43 and the heights side overhang section 46 estrange, and it will be in the status which the valve mainframe 2 and the cartridge 3 can remove.

[0016] Moreover, as shown in drawing 3 , while field 46a which engages with the concavity side overhang section 43 in the heights side overhang section 46 inclines in shaft orientations and the relative displacement to both shaft orientations becomes smooth, the mutual degree of engagement adhesion improves. And the stopper 47 which regulates the relative displacement of the circumference of **** of a heights 45 and the concavity 41 is formed in the edge of the heights side overhang section 46. When the edge of the concavity side overhang section 43 stops to this stopper 47, while both the overhangs sections 43 and 46 are engaged, the apical surface of a heights 45 carries out a pressure welding to the seals member 44, and a heights 45 and the concavity 41 engage with the fluid-tight status.

[0017] As shown in drawing 6 , seals member ****** 51 is formed in the inner skin in a concavity 41. The opening edge side of seal member ****** 51 is more than the maximum outer diameter of the seals member 44, and the seals member 44 can equip smoothly by the seals member side of seal member ****** 51 being smaller than the maximum outer diameter of the seals member 44.

[0018] It is desirable to use elastic members, such as EPDM (ethylene-propylene rubber), NBR (acrylonitrile-butadiene rubber), silicone rubber, isobutylene isoprene rubber, and natural rubber, so that the seals member 44 can be equipped easily and good seal nature may be obtained.

[0019] A step 52 is formed in the periphery of the seals member 44, this step 52 is stopped by seals member ****** 51, and falls out, and omission is prevented. That is, though the aqueductus faucet 4 is accidentally unstopped before a user attaches a cartridge 3 in the valve mainframe 2, and water jumps out of the raw water output port 12 of the valve mainframe 2, since the seals member 44 is stopped by seal member ****** 51, omission omission can be prevented. Moreover, if an error is noticed, an aqueductus faucet is closed and a cartridge 3 is attached after that, water leaks outside, and the valve mainframe 2 and the cartridge 3 can be stuck through the seals member 44 so that there may be no **.

[0020] Next, a connection operation of the bayonet device 40 is explained using drawing 7 and the drawing 8 .

[0021] In order to combine a cartridge 3 with the valve mainframe 2 in the fixed status of an erection posture, as shown in drawing 7 , a cartridge 3 is mostly leveled as the 1st step. In this status, the heights side overhang section 46 of a heights 45 is inserted into the notch 42 of a concavity 41. As the 2nd step, it sees from the valve mainframe 2 side, and about 90 degrees of cartridges 3 are rotated counterclockwise. Thereby, the concavity side overhang section 43 invades between the heights machine side 48 of a cartridge 3, and the heights side

overhang section 46 (refer to [drawing 3 and] the drawing 4). The concavity side overhang section 43 engages with inclined-plane 46a of the heights side overhang section 46, and the valve mainframe 2 and the cartridge 3 are combined with the fluid-tight status in the place where the edge of the concavity side overhang section 43 contacted the stopper 47 as a cartridge 3 carries out a rotation variation rate. At this time, a cartridge 3 will be in the erection status. Thus, the water purifier of this invention can connect a cartridge and a valve mainframe easily at two steps.

[0022] And as shown in drawing 9 , it may form the **-like overhang section 55 in the periphery of the seal member 54, and although the water purifier mentioned above is constituted so that the step 52 of the seals member 44 may stop to seals member ****** 51 formed in the concavity 41, it may constitute it so that it may stop into the omission setting slot 56 which the overhang section 55 formed at concavity inner skin.

[0023] Moreover, as shown in drawing 10 , the **-like overhang section 65 may be formed in the periphery of the seals member 64, and you may constitute so that it may stop among the overhang section 43 which this formed in the opening edge of concavity inner skin. The thing of such a mode is making seals member ****** and the concavity overhang section serve a double purpose. That is, the omission setting of a seals member can be attained by equipping the conventional valve mainframe with the seals member 64 which has the **-like overhang section 65. It is desirable for the **-like overhang section 65 to deform into the seals member 64, and to form the **-like overhang section 65 thinly with 0.3-3mm, using elastic members, such as rubber, as it is the above-mentioned so that an insertion at back of the concavity side overhang section 43 may be possible.

[0024] Moreover, as shown in drawing 11 , the outer diameter of a seals member may be enlarged, and you may constitute from a bore formed by part for the point of the concavity side overhang section 43 of a couple so that the seals member 74 may stop among the concavity side overhang section 43. The thing of such a mode is making seal member ****** and the concavity overhang section serve a double purpose. What is necessary is just to make the seals member 74 whole transform in the bore orientation greatly, in order to insert the seals member 74 into the concavity side overhang section 43.

[0025]

[Effect of the Invention] When a user takes out water before cartridge connection accidentally since seals member ****** was formed while the seals member was arranged by either [at least] raw water output port or the raw water acceptance opening, a seals member escapes from the water purifier of this invention, and it seldom flies. And since the valve mainframe and the cartridge have stuck after cartridge connection through a seals member, it can prevent a leak outside.

[0026] Moreover, when it has the bayonet device which consists of any of the raw water output port of a valve mainframe, or the raw water acceptance opening of the filtration section, a heights of the shape of a cylinder formed in one side, and a concavity formed in another side which attaches the heights and the 1st overhang section of a heights nose of cam side periphery side and the 2nd overhang section of concavity opening side inner skin are formed, connection with the valve mainframe of a cartridge can be ensured [easily and].

[0027] And when the overhang section which can engage with seals member ****** is formed in the seals member, the omission setting of a seals member can be more performed to an authenticity.

[0028] Furthermore, invention concerning a claim 4 can attain omission setting, using the conventional valve mainframe without omission setting as it is, when the 2nd overhang section formed in the concavity has seals member ******.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the outline front view showing the status that the water purifier concerning one embodiment of this invention was attached in the aqueductus faucet.
[Drawing 2] It is outline drawing of longitudinal section in drawing 1 .
[Drawing 3] Drawing 1 It is the outline perspective diagram of the status that the cartridge was removed from the valve mainframe showing the mode of connection of the shown water purifier.
[Drawing 4] It is the outline front view of the raw water output port of the valve mainframe in drawing 3 .
[Drawing 5] It is the outline front view of the raw water acceptance opening of a cartridge in drawing 3 .
[Drawing 6] It is the enlarged view showing the connection status of the valve mainframe and cartridge in drawing 2 .
[Drawing 7] It is outline drawing of longitudinal section as which the cartridge side was regarded from the valve mainframe side in drawing 1 .
[Drawing 8] It is outline drawing of longitudinal section showing the status that the cartridge of drawing 7 was stood.
[Drawing 9] It is the enlarged vertical longitudinal sectional view showing the mode of connection of the valve mainframe and cartridge of a water purifier concerning other embodiments of this invention.
[Drawing 10] It is the enlarged vertical longitudinal sectional view showing the mode of connection of the valve mainframe and cartridge of a water purifier concerning the embodiment of further others of this invention.
[Drawing 11] It is the enlarged vertical longitudinal sectional view showing the mode of connection of the valve mainframe and cartridge of a water purifier concerning still another embodiment of this invention.
[Description of Notations]
1 : Water Purifier
2 : Valve Mainframe
3 : Cartridge (Filtration Section)
4 : Aqueductus Faucet
10 : Raw Water Input
11 : Shower Delivery
12 : Raw Water Output Port
21 : Container
21a: Cylinder-like salient
22 : Raw Water Acceptance Opening
23 : Filtered Water Feed Hopper
24 : Cylinder Field
25 : O Ring
26 : Ring-like VCF
27 : Ring-like VCF
28 : Hollow Fiber Flux

29 : Adhesives
30 : Adsorbent Layer
31 : Transparent Covering
32 : Lid
40 : Connection
41 : Concavity
42 : Notch
43 : Concavity Side Overhang Section (2nd Overhang Section)
44 : Seals Member
45 : Heights
46 : Heights Side Overhang Section (1st Overhang Section)
46a: Engagement side
47 : Stopper
48 : Heights Machine Side
51 : Seals Member ******
52 : Step
54 : Seals Member
55 : Overhang Section
56 : It is Slot Stop Escaping.
64 : Seals Member
65 : Overhang Section
74 : Seals Member

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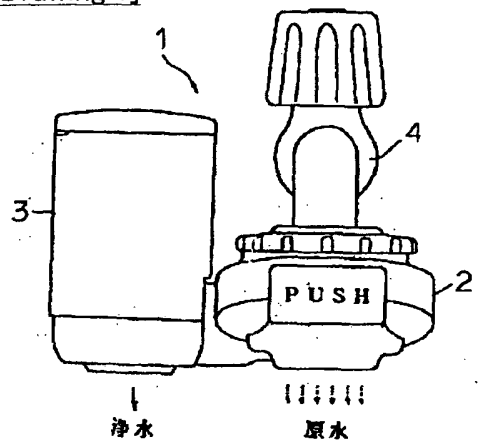
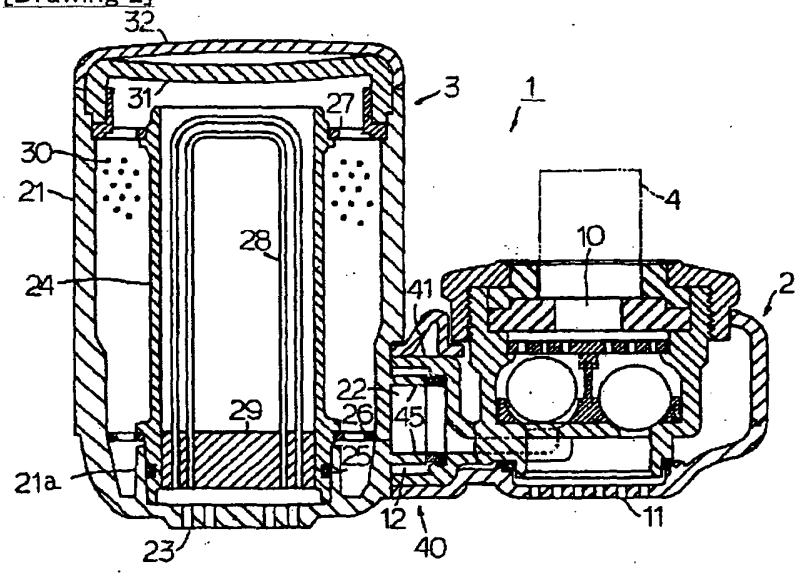
DRAWINGS

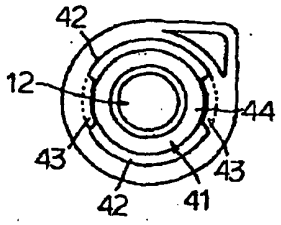
[Drawing 1]



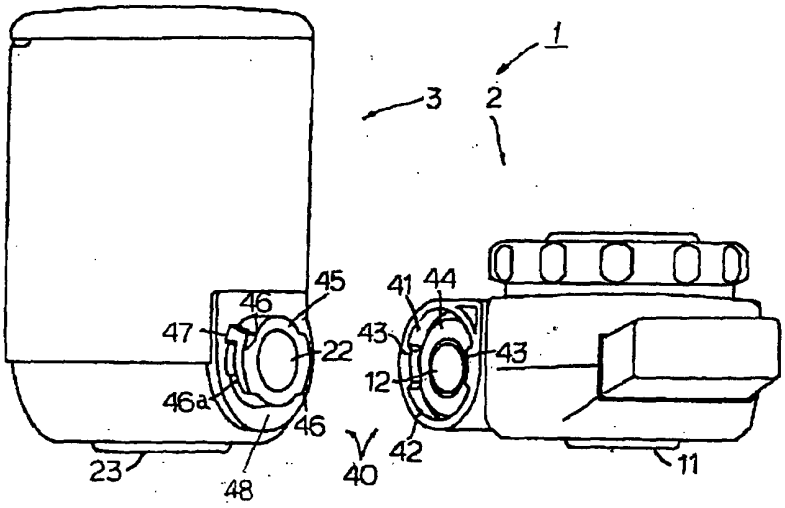
[Drawing 2]



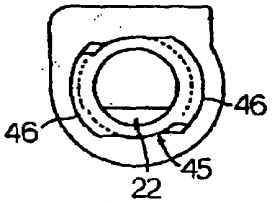
[Drawing 4]



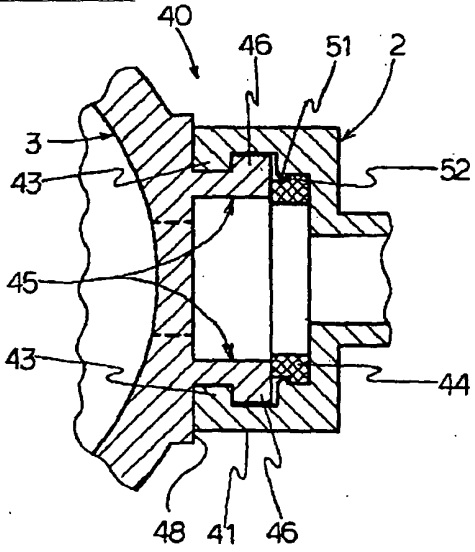
[Drawing 3]



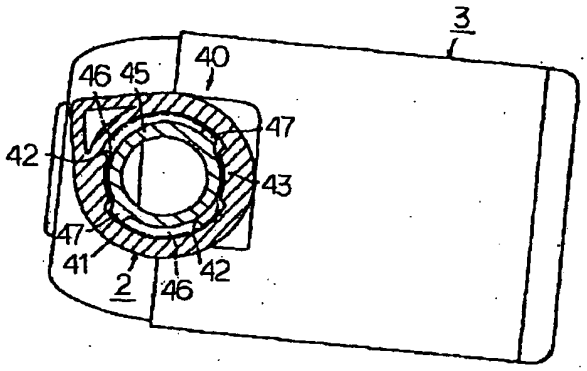
[Drawing 5]



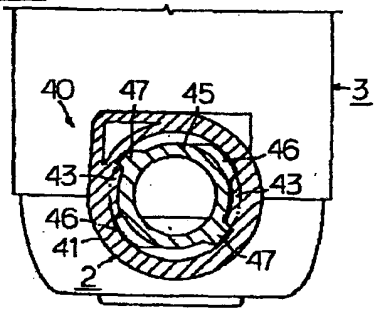
[Drawing 6]



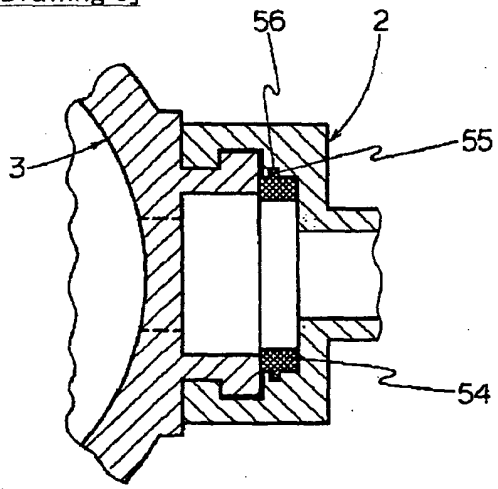
[Drawing 7]



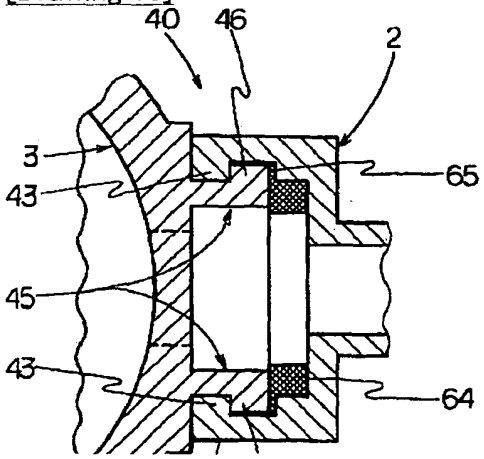
[Drawing 8]

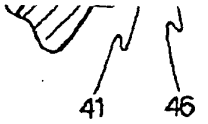


[Drawing 9]

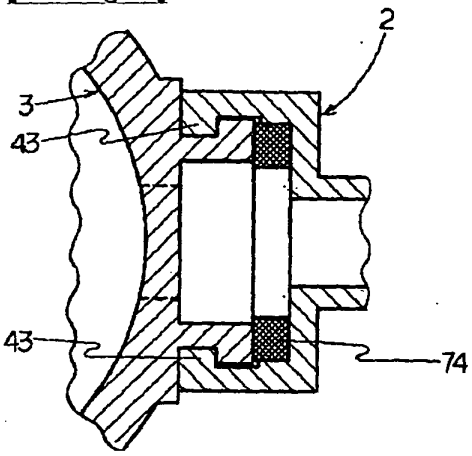


[Drawing 10]





[Drawing 11]



[Translation done.]

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(43)公開日　平成11年(1999)５月18日

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Ｂ０１Ｄ　35/04		Ｂ０１Ｄ　35/04	
Ｃ０２Ｆ　1/44		Ｃ０２Ｆ　1/44	Ｂ

審査請求　未請求　請求項の数４　ＯＬ　（全７頁）

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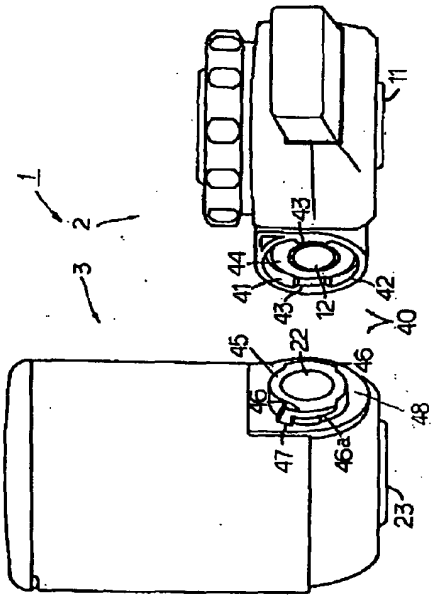
(54)【発明の名称】　浄水器

(57)【要約】
【課題】カートリッジと弁本体の接続を簡単かつ確実に行うことができるとともに、使用者が誤ってカートリッジ接続前に水を出しても、シール部材が抜け飛びにくい浄水器を提供する。
【解決手段】原水流入口１０と原水取出口１２を有する弁本体２と、弁本体２から原水を受け入れ濾過する、原水受入口２２を有する濾過部３とを備えた浄水器であって、弁本体２の原水取出口１２に濾過部３の原水受入口２２が着脱自在に接続されており、かつ、弁本体２の原水取出口１２または濾過部３の原水受入口２２の少なくとも一方に、シール部材４４が配備されるとともに、シール部材抜止部が形成されている。



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【特許請求の範囲】

【請求項１】原水流入口と原水取出口を有する弁本体と、この弁本体から原水を受け入れて濾過する、原水受入口を有する濾過部とを備えた浄水器であって、前記弁本体の原水取出口に濾過部の原水受入口が着脱自在に接続されており、かつ、弁本体の原水取出口または濾過部の原水受入口の少なくとも一方に、シール部材が配備されるとともに、シール部材抜止部が形成されていることを特徴とする浄水器。

【請求項２】請求項１に記載の浄水器において、弁本体の原水取出口または濾過部の原水受入口のいずれか一方に形成された円筒状の凸部と、他方に形成された、その凸部が嵌着される凹部とからなるバヨネット機構を有し、前記凸部には、周方向に延びている第１の張出部が先端側外周面の部分的に形成され、前記凹部には、前記凸部の第１の張出部の侵入を許容する切欠部と、周方向に延びている第２の張出部とが形成されている浄水器。

【請求項３】請求項１または請求項２に記載の浄水器において、シール部材が、シール部材抜止部に係合可能な張出部を有している浄水器。

【請求項４】請求項２または請求項３に記載の浄水器において、少なくとも１つの第２の張出部が、シール部材抜止部を兼ね備えている浄水器。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、原水の流入口と取出口を有する弁本体と、受け入れた原水を濾過する濾過部とを備えた浄水器に関し、さらに詳しくは、それら弁本体と濾過部との接続に関する。

【０００２】

【従来の技術】一般家庭の水道蛇口に取り付けられる浄水器は、一般に流入口と複数個の流出口を有する弁本体と、濾材が収納された濾過部とで構成されている。濾過部に濾材を大量に収納すると大型化して食器洗い等の作業の邪魔になるため、濾材を少量収納した小型カートリッジを弁本体に接続し、濾過性能が低下したらカートリッジを交換する方式が広く用いられている。

【０００３】カートリッジの弁本体への接続は、作業が容易で、しかも水漏れが生じない確実な方法が好ましい。特開平７－１１６６５６号公報、特開平７－２０４６３６号公報に記載されているような、弁本体に形成された凹部にカートリッジに形成された凸部を差し込み、凹部内周面の張出部と凸部外周面の張出部を係合して接続するバヨネット式接続は、作業が容易で手間がかからない。しかも、接続部において弁本体とカートリッジがリング状シール部材を介して密着しているため、外部に水漏れが起こりにくい。

【０００４】しかしながら、これらの浄水器は、弁本体に形成された凹部にリング状シール部材が単純に挿入されただけで、抜け止めが無い構造では、使用者がカートリッジ接続前に誤って水を出すと、水と共にリング状シール部材が抜け飛んでしまう。その後、使用者がリング状シール部材の脱落に気が付かずにカートリッジを接続して使用すると、接続部から水が漏れてしまうという問題点があった。

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【０００５】

【発明が解決しようとする課題】本発明は、弁本体へのカートリッジの接続を容易かつ確実に行うことができ、かつ、使用者が誤ってカートリッジ接続前に水を出した際にもシール部材が抜け飛びにくい浄水器を提供することを目的とする。

【０００６】

【課題を解決するための手段】上記課題を解決するための本発明は、原水流入口と原水取出口を有する弁本体と、この弁本体から原水を受け入れて濾過する、原水受入口を有する濾過部とを備えた浄水器であって、前記弁本体の原水取出口に濾過部の原水受入口が着脱自在に接続されており、かつ、弁本体の原水取出口または濾過部の原水受入口の少なくとも一方に、シール部材が配備されるとともに、シール部材抜止部が形成されていることを特徴とする浄水器である。

【０００７】ここで、弁本体の原水取出口または濾過部の原水受入口のいずれか一方に形成された円筒状の凸部と、他方に形成された、その凸部が嵌着される凹部とからなるバヨネット機構を有し、凸部には、周方向に延びている第１の張出部が先端側外周面の部分的に形成され、凹部には、凸部の第１の張出部の侵入を許容する切欠部と、周方向に延びている第２の張出部とが形成されていることが好ましい。また、シール部材が、シール部材抜止部に係合可能な張出部を有していること、そして、少なくとも１つの第２の張出部が、シール部材抜止部を兼ね備えていることも好ましい。

【０００８】

【発明の実施の形態】本発明の浄水器は、図１に示すように、水道蛇口に取り付けられる。この浄水器１は、その内部に３方弁構造を内蔵した弁本体２と、濾材が収納されたカートリッジ（濾過部）３とから構成されており、弁本体２の上部が水道蛇口４に取り付けられる。弁本体２とカートリッジ３は着脱自在に接続されている。

【０００９】弁本体２は、図２に示すように、上部に水道蛇口から原水を受け入れる原水流入口１０を、下部に原水をそのままシャワー水として吐出するシャワー吐出口１１を有する。そして、弁本体２の側部は、受け入れた原水をカートリッジ３へ供給するための原水取出口１２を有する。すなわち、弁本体２は、水道蛇口４からシャワー吐出口１１への流路と、水道蛇口４から原水取出口１２への流路とを備えている。この弁本体２は、原水流入口１０から受け入れた原水を、２つの流出口のいずれか一方に導く３方弁を有するが、原水シャワー口・原水取出口以外に原水ストレート口を有する４方弁であっ

ても、また、４つ以上の流出口を有する多方弁であってもよい。カートリッジ３は、その容器２１の側部に、弁本体２の原水取出口１２に接続される原水受入口２２を有し、また、その容器２１の下部には原水受入口２２から受け入れた原水を濾過して吐出する、複数のシャワー孔のある濾過水供給口２３を有する。そして、容器２１の内部底面に形成された円筒状突起２１ａには円筒体２４の下端がＯリング２５を介して嵌入立設され、この円筒体２４の上下端外周面が、リング状フィルター２６、２７で容器２１の内壁面に固定されている。

【００１０】円筒体２４の内部には、複数本の中空糸膜を束ねて逆Ｕ字状に折り曲げた中空糸膜束２８が装填されている。中空糸膜の両端末は、円筒体２４の下部に接着剤２９を充填して封止固定（ポッティング）し、容器２１へ嵌入する前にポッティング部を一部切断除去している。その結果、各中空糸膜の端末は濾過水供給口２３に向かって開口している状態が保たれる。

【００１１】円筒体２４と容器２１の間には、抗菌活性炭、ゼオライト、イオン交換樹脂、キレート樹脂などからなる吸着剤３０が装填されている。

【００１２】容器２１の上部は、中空糸膜束２８と吸着剤３０を容器２１内に容易に装填できるよう広く開口し、中空糸の汚れ具合が外部からよく見えるように透明カバー３１を嵌入して超音波溶着されている。そして透明カバー３１の上部には、容器２１と着脱自在な蓋３２が取り付けられている。

【００１３】以下、弁本体とカートリッジとの接続において好ましいバヨネット機構について説明する。

【００１４】図３、図４に示すように、バヨネット機構４０の一端として、弁本体２側部の原水取出口１２に円筒状の凹部４１が形成されている。この凹部４１における内周面の開口端部側には、切欠部４２と、周方向に延びた凹部側張出部４３がそれぞれ一対ずつ形成されている。なお、この凹部側張出部４３が本発明における第２の張出部に相当する。また、バヨネット機構の他端として、図３、図５に示すように、カートリッジ３の原水受入口２２に、前述の凹部４１に差し込める円筒状の凸部４５が形成されている。この凸部４５は、凹部４１における一対の凹部側張出部４３の先端部分で形成される内径よりも、若干小径になっている。そして、凸部４５の先端側外周面には、凹部４１の内周面に形成された一対の切欠部４２それぞれに進入可能な一対の凸部側張出部４６が形成されている。なお、この凸部側張出部４６は本発明における第１の張出部に相当する。

【００１５】弁本体２とカートリッジ３は、図６に示すように、凸部４５が凹部４１に差し込まれて両者が軸芯周りに相対変位されることにより、凹部側張出部４３と凸部側張出部４６との対向する面が係合して結合した状態となる。また、その逆方向に相対変位されることにより、凹部側張出部４３と凸部側張出部４６とが離間して弁本体２とカートリッジ３とが取り外し可能な状態となる。

【００１６】また、図３に示すように、凸部側張出部４６における凹部側張出部４３と係合する面４６ａは、軸方向に傾斜しており、両者の軸方向への相対変位がスムーズになるとともに、互いの係合密着度が向上するようになっている。そして、凸部側張出部４６の端部には凸部４５と凹部４１との軸芯周りの相対変位を規制するストッパ４７が設けられている。このストッパ４７に凹部側張出部４３の端部が係止したときに、両張出部４３、４６が係合するとともに、凸部４５の先端面がシール部材４４に圧接して、凸部４５と凹部４１とが液密状態に係合するようになっている。

【００１７】凹部４１における内周面には、図６に示すように、シール部材抜止部５１が形成されている。シール部材抜止部５１の開口端部側がシール部材４４の最大外径以上で、かつ、シール部材抜止部５１のシール部材側がシール部材４４の最大外径よりも小さくなっていることで、シール部材４４が滑らかに装着できる。

【００１８】シール部材４４には、容易に装着でき、かつ、良好なシール性が得られるように、ＥＰＤＭ（エチレン・プロピレンゴム）、ＮＢＲ（アクリロニトリル・ブタジエンゴム）、シリコーンゴム、ブチルゴム、天然ゴムなどの弾性部材を用いることが好ましい。

【００１９】シール部材４４の外周には段部５２が設けられ、この段部５２がシール部材抜止部５１に係止されて抜け落ちが防止される。すなわち、使用者がカートリッジ３を弁本体２に取り付ける前に誤って水道蛇口４を開栓し、弁本体２の原水取出口１２から水が飛び出したとしても、シール部材４４がシール部材抜止部５１に係止されるため、抜け落ちを防止することができる。また、その後、誤りに気が付いて水道蛇口を閉栓しカートリッジ３を取り付ければ、外部に水が漏れないよう、弁本体２とカートリッジ３とをシール部材４４を介して密着できる。

【００２０】次に、図７，図８を用いて、バヨネット機構４０の接続動作を説明する。

【００２１】直立姿勢の固定状態にある弁本体２にカートリッジ３を結合するには、第１ステップとして、図７に示すように、カートリッジ３をほぼ水平にする。この状態で、凸部４５の凸部側張出部４６を凹部４１の切欠部４２内に挿入する。第２ステップとして、弁本体２側から見てカートリッジ３を反時計方向に９０°程度回転する。これにより、凹部側張出部４３が、カートリッジ３の凸部基面４８と凸部側張出部４６との間に侵入する（図３、図４参照）。カートリッジ３が回転変位するにつれて、凸部側張出部４６の傾斜面４６ａに凹部側張出部４３が係合していき、凹部側張出部４３の端部がストッパ４７に当接したところで、弁本体２とカートリッジ３とが液密状態に結合される。このときカートリッジ３

は直立状態になる。このように、本発明の浄水器は、カートリッジと弁本体を２ステップで容易に接続することができる。

【００２２】そして、前述した浄水器は、凹部４１に形成したシール部材抜止部５１に、シール部材４４の段部５２が係止するように構成されているが、図９に示すように、シール部材５４の外周に鍔状の張出部５５を設け、その張出部５５が凹部内周面に形成した抜け止め溝５６に係止するように構成してもよい。

【００２３】また、図１０に示すように、シール部材６４の外周に鍔状の張出部６５を設け、これが凹部内周面の開口端部に形成した張出部４３に係止するように構成してもよい。かかる態様のものは、シール部材抜止部と凹部張出部を兼用しているものである。すなわち、従来の弁本体に、鍔状の張出部６５を有するシール部材６４を装着することにより、シール部材の抜け止めを達成することができる。シール部材６４には、鍔状の張出部６５が変形し凹部側張出部４３の奥への挿入が可能なように、前述のとおりゴムなどの弾性部材を用い、かつ、鍔状の張出部６５を０．３～３ｍｍと薄く形成することが好ましい。

【００２４】また、図１１に示すように、一対の凹部側張出部４３の先端部分で形成される内径よりも、シール部材の外径を大きくし、シール部材７４が凹部側張出部４３に係止するように構成してもよい。かかる態様のものは、シール部材抜止部と凹部張出部とを兼用しているものである。凹部側張出部４３の奥へシール部材７４を挿入するには、シール部材７４全体を内径方向に大きく変形させればよい。

【００２５】

【発明の効果】本発明の浄水器は、原水取出口または原水受入口の少なくとも一方にシール部材が配備されるとともに、シール部材抜止部が形成されているので、使用者が誤ってカートリッジ接続前に水を出した時にも、シール部材が抜け飛びにくい。そして、カートリッジ接続後は、弁本体とカートリッジがシール部材を介して密着しているため、外部への水漏れを防ぐことができる。

【００２６】また、弁本体の原水取出口または濾過部の原水受入口のいずれか一方に形成された円筒状の凸部と、その凸部を嵌着する他方に形成された凹部とからなるバヨネット機構を有し、凸部先端側外周面の第１張出部と、凹部開口側内周面の第２張出部が形成される場合には、カートリッジの弁本体への接続を容易かつ確実に行うことができる。

【００２７】そして、シール部材に、シール部材抜止部に係合可能な張出部が形成されている場合には、シール部材の抜け止めを、より確実に行うことができる。

【００２８】さらに、請求項４に係る発明は、凹部に形成された第２の張出部が、シール部材抜止部を兼ね備えている場合には、抜け止めが無い従来の弁本体をそのまま用いて、抜け止めを達成することができる。

【図面の簡単な説明】

【図１】本発明の一実施態様に係る浄水器を水道蛇口に取り付けた状態を示す概略正面図である。

【図２】図１における概略縦断面図である。

【図３】図１示した浄水器の接続の様子を示す、弁本体からカートリッジを取り外した状態の概略斜視図である。

【図４】図３における弁本体の原水取出口の概略正面図である。

【図５】図３におけるカートリッジの原水受入口の概略正面図である。

【図６】図２における弁本体とカートリッジの接続状態を示す拡大図である。

【図７】図１において弁本体側からカートリッジ側を見た概略縦断面図である。

【図８】図７のカートリッジを立てた状態を示す概略縦断面図である。

【図９】本発明の他の実施態様に係る浄水器の、弁本体とカートリッジの接続の様子を示す拡大縦断面図である。

【図１０】本発明のさらに他の実施態様に係る浄水器の、弁本体とカートリッジの接続の様子を示す拡大縦断面図である。

【図１１】本発明のさらに別の実施態様に係る浄水器の、弁本体とカートリッジの接続の様子を示す拡大縦断面図である。

【符号の説明】

１　：　浄水器
２　：　弁本体
３　：　カートリッジ（濾過部）
４　：　水道蛇口
１０　：　原水流入口
１１　：　シャワー吐出口
１２　：　原水取出口
２１　：　容器
２１ａ：円筒状突起
２２　：　原水受入口
２３　：　濾過水供給口
２４　：　円筒体
２５　：　Ｏリング
２６　：　リング状フィルタ
２７　：　リング状フィルタ
２８　：　中空糸膜束
２９　：　接着剤
３０　：　吸着剤層
３１　：　透明カバー
３２　：　蓋
４０　：　接続部
４１　：　凹部

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４２　：　切欠部
４３　：　凹部側張出部（第２の張出部）
４４　：　シール部材
４５　：　凸部
４６　：　凸部側張出部（第１の張出部）
４６ａ：係合面
４７　：　ストッパ
４８　：　凸部基面

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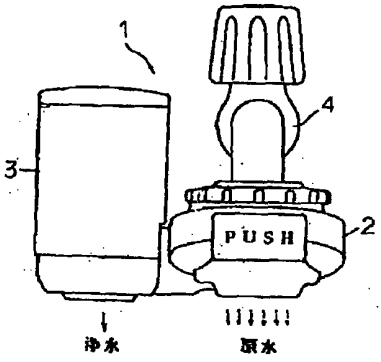
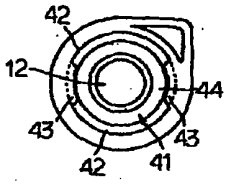
＊５１　：　シール部材抜止部
５２　：　段部
５４　：　シール部材
５５　：　張出部
５６　：　抜け止め溝
６４　：　シール部材
６５　：　張出部
＊　７４　：　シール部材

【図１】



【図４】



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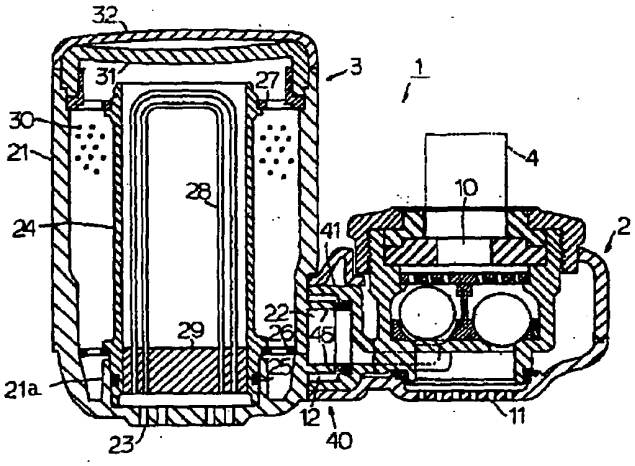

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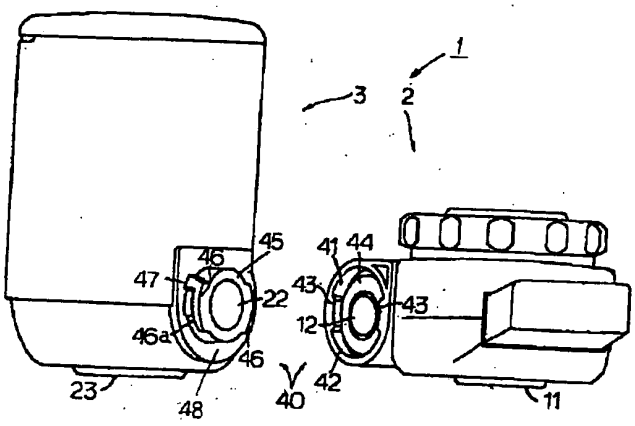

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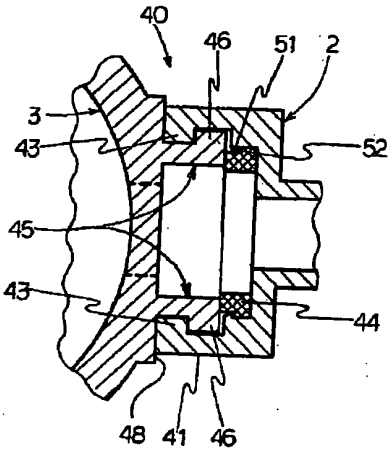

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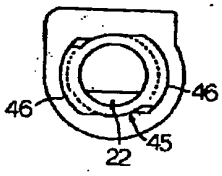

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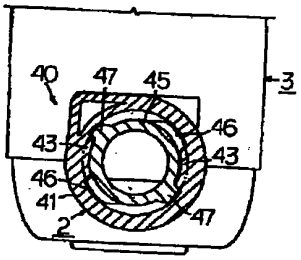

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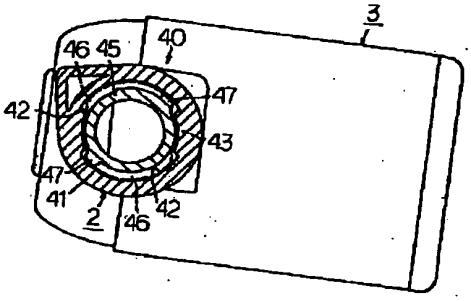

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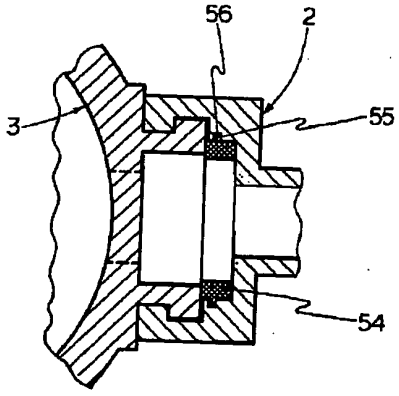

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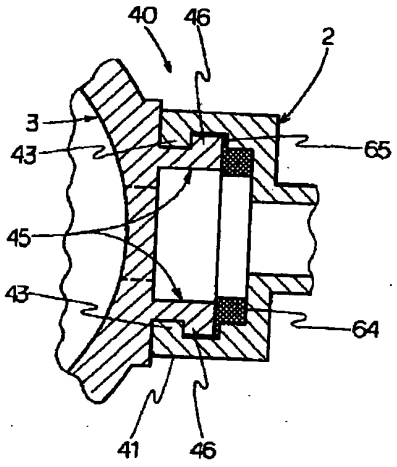

【図11】